

This course can be adapted to virtual classroom mode

Design & Operation of a Safety Instrumented System (SIS)

2 days
Overview

SIS-EN-A

LEVEL

Skilled

PURPOSE

Understand how a risk can be reduced by an instrumented safety barrier.

LEARNING OBJECTIVES

Upon completion of the course, participants will be able to:
determine the Safety Integrity Level (SIL) of a simple system,
identify the need to implement a Safety Instrumented System (SIS),
apply knowledge of the main topics of the IEC61511 standard methodology to design a SIS system.

WAYS AND MEANS

Step by step case study.
Study of SIS on mini processes test benches.

LEARNING ASSESSMENT

Quiz.

PREREQUISITES

Provide evidence of a basic knowledge in safety and instrumentation.

Agenda

SIS & SAFETY BARRIERS

Different safety instrumented systems: PSS, ESD, F&G, HIPS, ESP.
Links between the different SIS - Global architecture.
Control loop: basic knowledge; elements constituting a SIS.

0.5 d

SIS & INDUSTRIAL RISK CONTROL

Use of safety reviews (HAZOP & LOPA & HAZOP) to determine the need for a Safety Instrumented Function (SIF).
Concept of independent protective layers.
Use of a risk matrix to determine the level of SIL required for each RIS.

0.5 d

SIS SPECIFICATION

Role of functional analysis.
FIS allocation, cause and effect matrix, redundancy and common mode.
Typical design.
Simple SIL calculations. Analysis of supplier documentation.
SIL level and frequency of testing.

1 d